

## **EFFECT OF A GnRH VACCINE (GonaCon<sup>TM</sup>) ON THE FERTILITY OF MALE AND FEMALE WALLABIES**

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The management of introduced and/or overabundant vertebrates in Australia currently relies mainly on lethal methods (trapping, shooting or poisoning). These require regular application and may or may not be species specific. Alternative approaches, such as fertility control, have been under development for more than two decades, but none have reached the stage of field testing in Australia.

Targets for fertility control include disruption of either the reproductive endocrine axis, the function of the gonads, fertilisation, and/or implantation. Later stages of pregnancy and lactation could also be targeted although these approaches raise animal welfare issues. In Australia, laboratory research on the development of virally vectored fertility control agents has ceased due to major technical difficulties with respect to duration of induced infertility and/or transmission of the engineered virus between individuals. Other research is continuing on the use of hormone implants (steroids or agonists of gonadotrophin releasing hormone, GnRH) delivered subcutaneously, as well as immunocontraceptive vaccines delivered by the intramuscular route. Infertility achieved with these techniques varies depending on the dose contained in the implant or the level of immune response in the host. The longer term goal is remote delivery of these agents via darts or oral delivery via food baits.

A GnRH vaccine, GonaCon<sup>TM</sup>, has been shown to effect fertility in a range of eutherian species – for example in female white-tailed deer GonaCon<sup>TM</sup> induces infertility for periods of 2-5 years. We have commenced studies to assess the effects of GonaCon<sup>TM</sup> in adult female and pre-pubertal male tammar wallabies (*Macropus eugenii*). In March 2007, groups of twelve tammars were vaccinated intramuscularly with (1) vehicle control; (2) a single shot of 500 µg GonaCon<sup>TM</sup>; or (3) two shots of 500 µg GonaCon<sup>TM</sup> one month apart.

Seven weeks after the first vaccination, the testes of vaccinated males were reduced in size and the volume has remained unchanged from 11-52 weeks post vaccination. In contrast, the testis volume of the control animals increased to adult size. Somatic growth rates in all males have been similar since vaccination. The fertility of control and vaccinated females was assessed 4 months after treatment by removal of pouch young: birth or mating occurred 26-28 days later in 8 of 10 control females, 2 of 10 single-shot females and 0 of 10 double-shot females. At 12 months post-vaccination, control females (6/10) have commenced breeding, but no vaccinated animals (0/24) have given birth or mated at end of February, 2008.

We can conclude that the short term effects of this vaccine are promising. If the vaccine proves efficacious in the longer term (>2years) it could be suitable for the management of captive or semi-captive populations of macropodids.